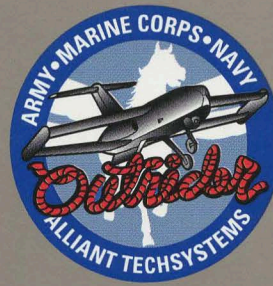
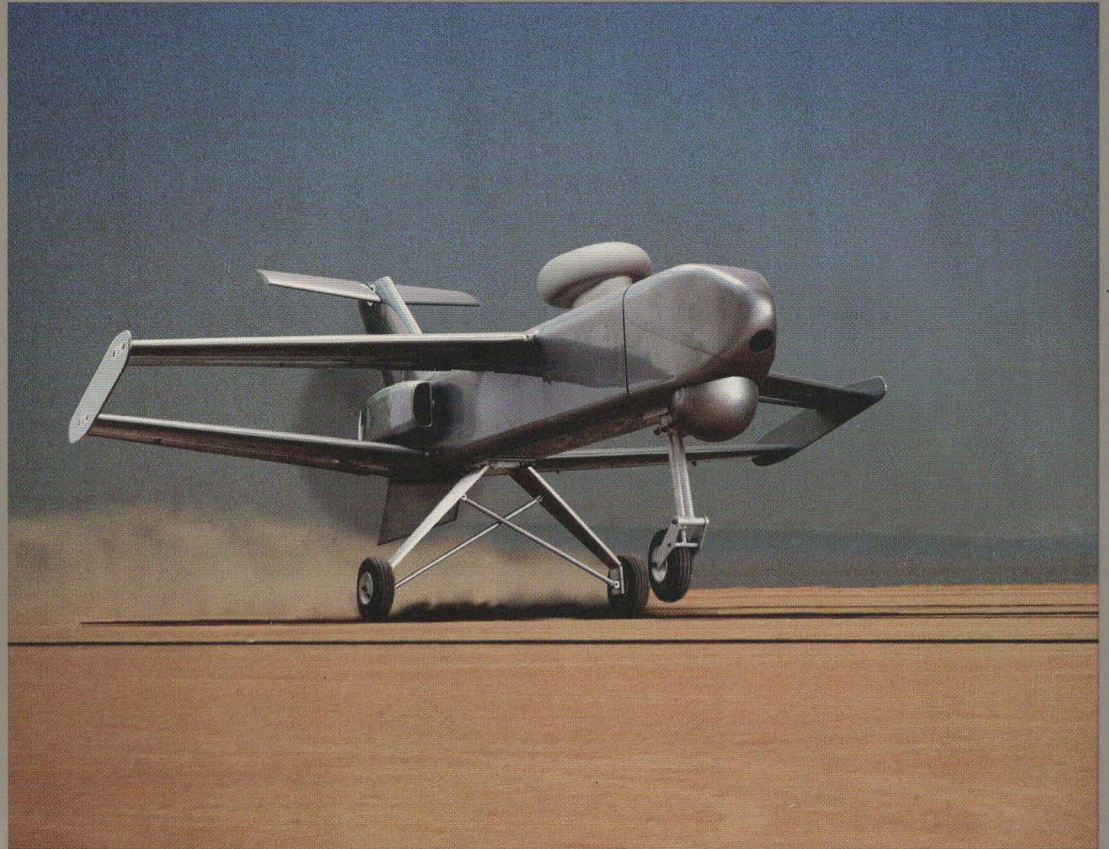


ALLIANTTECHSYSTEMS



Outrider™

Workhorse for the
Warfighter



Outrider: A revolutionary advancement that will change the way wars are fought



Today, the ability to obtain, process, and communicate information is more critical in determining the outcome of a conflict than number of troops deployed, aircraft fielded, or rounds fired.

Unlike any other system available, Outrider will provide the Army Brigade, U.S. Marine Corps Air Ground Task Force, and Navy commanders with a dedicated unmanned aerial vehicle system that delivers timely, accurate and complete reconnaissance, surveillance and target acquisition information in near-real time without risking the lives of pilots or other air crewmen.

Outrider meets all three services' demanding requirements. It is deployable from land or ship deck. It takes off and lands automatically without use of launcher or recovery gear. It transmits high-quality day/night imagery in near-real time. And it makes mission planning as easy as operating a personal computer.

Designed to perform anywhere, anytime

To meet both the U.S. Army's and Navy's very different needs, Outrider gives the performance of two vehicles for the price of one innovative, dual-wing design.

Outrider is ideally suited for takeoff from unimproved terrain or the 100-by-8-meter area of a flight deck. The secret of Outrider's flexibility is its design. For extra lift and stability, its dual wings act independently. At takeoff, they function as a slotted wing aircraft, giving Outrider the lift to take off in as little as 70 meters without aid of a launcher.

Precise touchdown is made possible by an Integrity Beacon Landing System, which uses differential GPS augmented with two integrity beacons beside the landing approach path to provide centimeter-level accuracy to the autopilot. No parachutes, parafoils, or arresting wires are needed.

As for range, Outrider can look 40 kilometers over the next hill or fly from a carrier 200 kilometers offshore to scout inland for hours and then return.

The Outrider heavy fuel engine uses fuel commonly available on board ships and on the battlefield, reducing the logistics burden. What's more, four air vehicles comprise one complete system, ensuring availability around the clock, day or night.

Two people can assemble the modular 10-piece airframe and be ready for operation in just 28 minutes.



Easy to operate

Outrider and its crew of eight can operate autonomously for 72 continuous hours. Six operators are available to set up the system, plan and coordinate the mission. Two maintenance mechanics ensure system functionality at all times.

Any soldier or sailor with minimal training can operate Outrider safely. The ruggedized commercial off-the-shelf workstation runs UNIX operating system software, set up as a totally open architecture. This is the same approach used by the Navy's tactical advanced computer (TAC-3 and TAC-4) control stations to execute shipboard missions for air-launched systems.

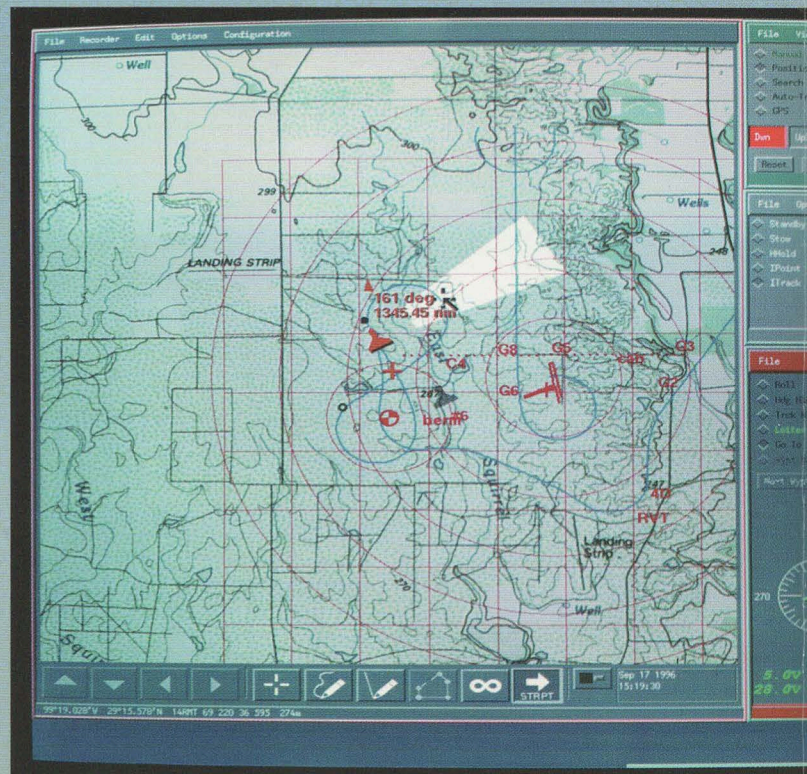
The ground control station makes piloting the craft virtually error-free. Features include:

- Flight plan generation by simply clicking on the location—preventing errors caused by typing in the wrong coordinates

- Automatic calculation of fuel needed and flight duration
- Mapping of the aircraft's altitude with terrain heights superimposed, preventing mishaps
- Instant recognition of aircraft position, direction, and sensor orientation
- Issuance of warning messages when parameters such as fuel level, engine temperature, and data link condition are out of bounds.

After planning and preflight tests are complete, Outrider automatically takes off and flies itself. If the mission changes mid-flight, the operator simply points to the new location on the computer screen's map to send it there. The ground data terminal is a C-band data link, enabling communications with the air vehicle at distances up to 200 kilometers.

Flight operations on board ship take only three minutes for takeoff and two minutes for landing.



The payoff is real-time imagery

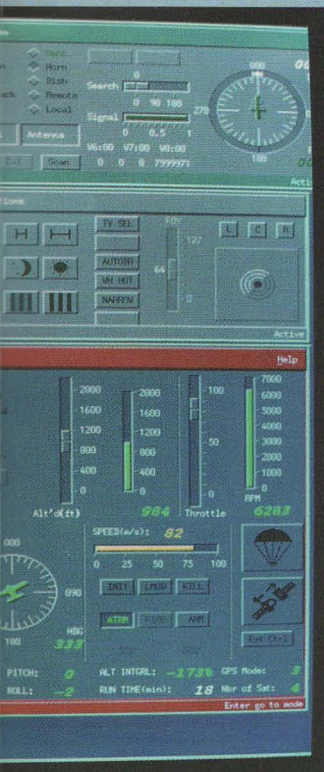
Outrider's on-board cameras give the maneuver commander a bird's eye view of the area in question.

Outrider carries a modular mission payload called the Plug-In Optronical Payload, which uses a focal plane array. A color CCD camera is coaligned with the FLIR to provide high-quality visible and infrared video both day and night, and in all weather.

System capabilities include cued location pointing, area search, target tracking, and accurate determination of absolute target position.



Outrider's forward looking infrared (FLIR) and color charged coupled device (CCD) camera will transmit images from high altitude both day and night.



Ground operators with mouse and keyboard can generate Outrider's flight plan and alter its course in mid mission.

The ground control station includes two workstations: one is used for mission planning and monitoring and the other is used to view images from Outrider's cameras.



Designed for growth

Outrider's baseline system is rooted in the best of proven technology with features for future growth.

Its modular system design will easily accommodate Common Automatic Recovery System (CARS) integration. Synthetic aperture radar payload alternatives also can be cost effectively integrated into the system risk-free.

From a computing perspective, the system is expandable. Our ground station is based on a UNIX open architecture and is X-windows compatible. The architecture is compatible with the Joint Integration Interfaces (JII) and is designed to support future TCS concepts. The RF modem data link is adaptable to multiple formats.

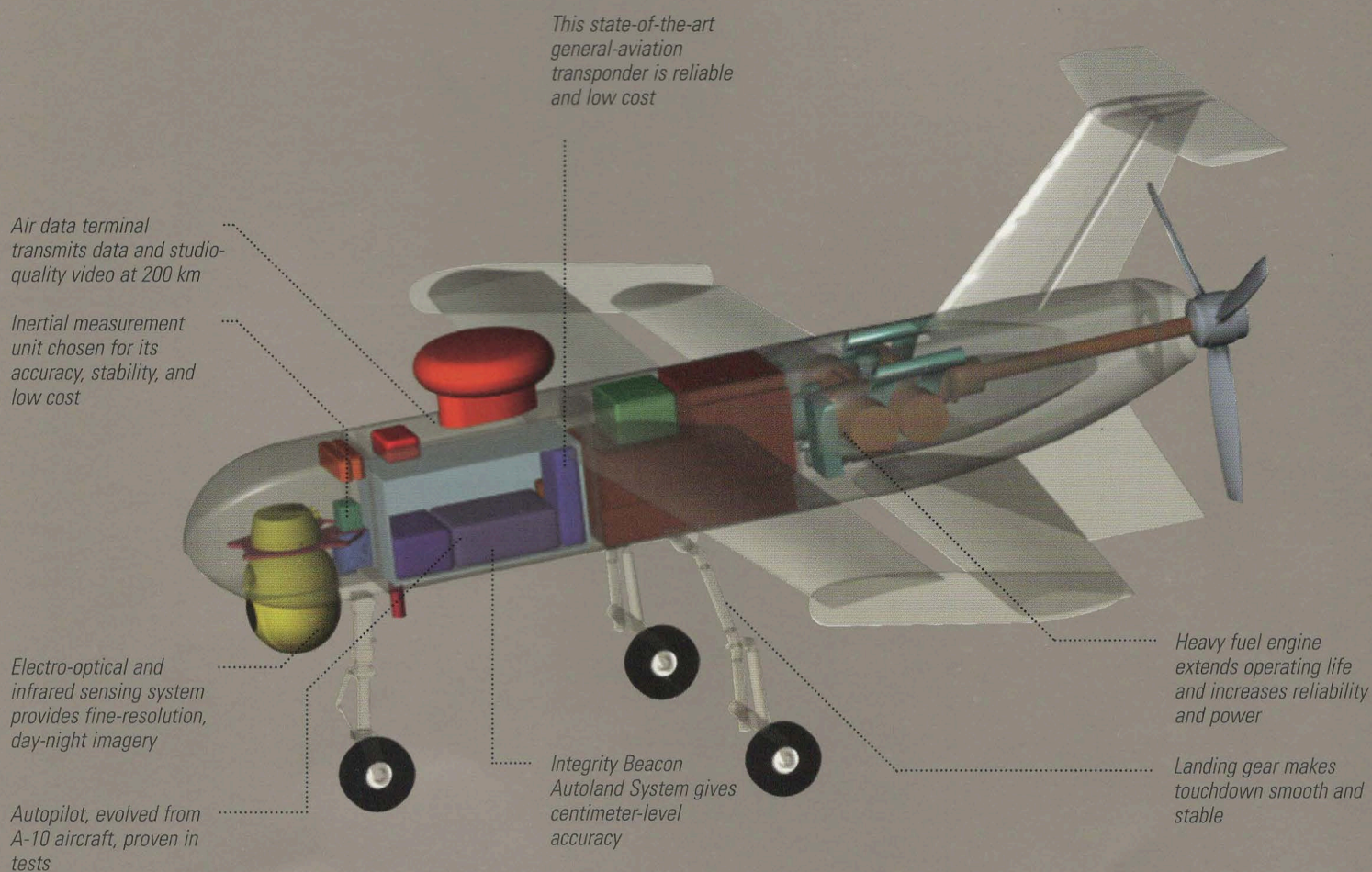
Our workhorse-like air vehicle can carry heavier payloads. Outrider's payload bay has over 40,000 cubic centimeters of usable space available and can carry 40 kilograms of payload. More than 750 watts of additional power are also available.

Although Outrider's range and endurance exceed the joint services requirements, both can be extended 50 percent by adding internal wing fuel bladders.



The Outsider System

Components	Size and Weight	Performance
Four air vehicles	Wing span—3.4 m	Dash speed—110 kt
Four mission payloads —EO/IR	Overall length—3.0 m	Minimum flying speed—35 kt
Ground control equipment	Wing area—2.6 sq. m	On-station endurance
One remote video terminal	Dry weight—155 kg (340 lb)	— 4 hr for 200 km
One mobile maintenance facility per three systems	Available fuel and oil—38.6 kg (85 lb)	— 7 hr for 50 km



Outsider features approximately 90 percent nondevelopmental items and commercial off-the-shelf hardware, lowering system life-cycle cost and making it easy to maintain.



Outrider Team

The Outrider team is being managed for the Department of Defense by the Program Executive Officer, Cruise Missiles and Joint Unmanned Aerial Vehicle. Day to day management is provided by a program manager and a small staff based in Arlington, VA.



Team Members

Alliant Techsystems is prime contractor and systems integrator. Our team includes:

Broadcast Microwave Services

Cirrus Design

Combustion Dynamics Ltd.

GS Engineering

IAI Tamam

IntegriNautics

Lockheed Martin

Mission Technologies

Phototelesis

Science Applications
International Corporation

Southwest Research Institute

The Stratos Group

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For more information about
Outrider, visit us at
<http://www.atk.com>